

# Strategic Plan for **ASTHMA** in CALIFORNIA

**Gray Davis**  
Governor  
State of California

**Grantland Johnson**  
Secretary  
California Health and Human  
Services Agency

**Diana M. Bontá, RN, DrPH**  
Director  
California Department of  
Health Services



2002



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## Executive Summary

Asthma has been recognized as a growing critical public health issue. The United States Department of Health and Human Service's (DHHS) report, "Action Against Asthma," (2000) described asthma as an "epidemic" due to the steady rise in the proportion of people acquiring the disease, and its severity in those who have it. Asthma is responsible for approximately 40,000 hospitalizations and 600 deaths annually in California. There are eight Healthy People 2010 Objectives for asthma, reflecting the importance of this health issue at the federal level (see Appendix A).

The effects of asthma include missed school and work days, disruption of sleep and daily activities, emergent medical visits for asthma exacerbations, and even death. It affects not only persons with asthma, but also family members, friends, schools, and businesses. Statistics reveal that asthma disproportionately adversely affects African Americans and low-income populations. It will be important to target high-risk populations to work toward eliminating these health disparities in the burden of asthma and improve the quality of life of all those who are affected by asthma.

Table I

### **KEY GOALS:**

#### **Research, Epidemiology, and Evaluation Goal Statement**

Conduct etiologic, applied, and translation research including descriptive epidemiology, to develop and implement effective asthma prevention and management services.

#### **Public Education Goal Statement**

Improve the understanding and management of asthma as both a personal and public health issue for people with asthma and their families, policy makers, and the general public.

#### **Treatment and Management Goal Statement**

Optimize the diagnosis, treatment, and management of asthma in California by adherence to the current National Heart, Lung, and Blood Institute's asthma guidelines.

#### **Secondary Prevention of Asthma**

Identify opportunities to reduce exposure to asthma triggers (allergens and irritants) in the home, preschool, school, workplace, and outdoor environment to prevent asthma episodes or reduce their severity.

#### **Policy Goal Statement**

Advocate and support policies that promote "asthma friendly" communities, especially those that eliminate the disproportionate burden of asthma for people living in poverty and people of color.

The California Department of Health Services (DHS) sponsored the development of this Strategic Plan (Plan) for Asthma in California to set a direction to address this important public health issue over the next three to five years. Asthma is a complex disease that requires the dedication of a broad range of constituents in order to be addressed comprehensively. The Plan reflects the “Priority Areas” of the “Action Against Asthma” report (DHHS, 2000), the Healthy People 2010 objectives for asthma and the technical assistance program report “Asthma in California: Laying the Foundation for a Statewide Strategy” (Kreutzer, Lipsett, Von Behren, Yamada, 1998). The Plan was developed by a multidisciplinary group of stakeholders throughout California, addressing multiple aspects of this disease and disparities among those affected by this disease.

Important partnerships must be fostered in order to achieve the Plan’s objectives. The success of the Plan depends on collaborations among multiple partners, which include but are not limited to public health professionals, health care providers, community members and organizations, professional organizations, health organizations, ethnic organizations, school organizations, environmental organizations, researchers, local leaders, and people with asthma and their families. In addition, plan implementation will be enhanced with the availability of fiscal resources.

# Development and Use of the Plan

## *Development of the Strategic Plan*

In recognition of the growing public health concern about asthma, the California Department of Health Services (DHS), in cooperation with the California Policy Research Center of the University of California, convened a conference in May 1998. The purpose of the conference was to discuss the current state of knowledge about asthma and its implications for research and public policy in the state. The outcome of the conference was a report that outlined a research and policy agenda for asthma, entitled "Asthma in California: Laying the Foundation for a Statewide Strategy."

In the summer of 1999, DHS convened the California Asthma Advisory Committee. The committee recommended the continued development of the statewide strategic plan. The Plan evolved from this coordinated effort and was developed with the input of multiple asthma stakeholders throughout California. The first in-person meeting occurred in October 1999 with a multi-disciplinary work group that laid the framework for the Plan. This work group included stakeholders representing medicine, public health, environmental organizations, community organizations, asthma experts, and persons personally affected by asthma. The work group was divided into four subcommittees: 1) Research, Epidemiology, and Evaluation; 2) Public Education; 3) Treatment and Management; and 4) Policy. In the ensuing months, these four groups continued to develop and refine specific goals, objectives, and strategies for California to address asthma over the next three to five years. The key goals are summarized in Table 1. DHS is indebted to the many persons (listed on pages ii-iv) who have contributed their time and thoughtful input into this Plan.

## *Using the Strategic Plan*

Asthma is a rising, complex, multi-factorial public health issue for which there is no simple, easy, one-time solution. Therefore, there is an immediate need for a comprehensive effort, collaboration of appropriate systems, organizations, and individuals to address asthma in California.

The "Strategic Plan for Asthma in California" is written for use by DHS and all statewide organizations in California, that provide asthma services. Successful implementation of the plan will depend on partnering, collaboration, innovation, and the availability of funding sources. State and local organizations may choose to prioritize the goals and objectives in order to achieve local success. The strategic plan evolved from a critical need to address asthma in both an organized and comprehensive manner.

One can support the need to address the asthma issue by using the "Strategic Plan for Asthma in California" by:

- Allowing leaders and organizations to have a framework to assess the current status of asthma programs and activities in their community/institution and identify areas for improvement or coordination,
- Discussing initiatives with policymakers and other groups to influence asthma policies and funding,
- Committing one's organization to appropriate local strategies,
- Identifying and sharing resources for the control of asthma in California,
- Providing guidance and a framework for new or ongoing asthma activities locally.

By implementing these strategies, California will: (1) increase awareness of asthma and its adverse effects on health; (2) improve quality of life; (3) decrease economic costs; and (4) develop strategies for addressing the rising morbidity and adverse effects due to asthma.

The Plan begins by providing an overview of the issue, a description of the committee, and a summary of the objectives and strategies of the major goals of the strategic plan. The Plan's goals and objectives are not ranked in any order of priority.

## Background

### What is Asthma?

Asthma is a chronic inflammatory disorder of the airways, which causes recurrent wheezing, coughing, difficulty breathing, and tightness of the chest. Asthma exacerbations can range from a mild episode to a life-threatening event. Although there is no cure at this time, most asthma episodes can be prevented with appropriate management, which includes appropriate use of preventive medications and provision of a healthy physical environment.

### Asthma Morbidity and Mortality

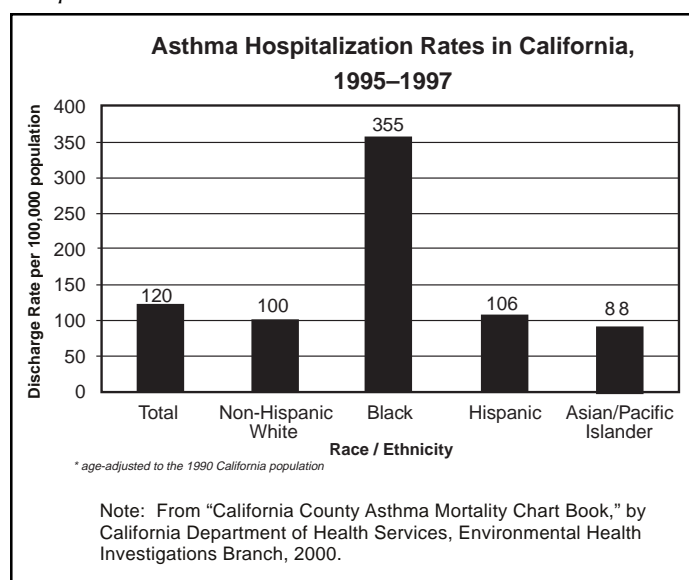
Over 2 million Californians suffer from asthma. (Centers for Disease Control and Prevention [CDC] 1998). The national prevalence of self-reported asthma has increased 74 percent since 1980, based on the National Health Interview Survey, and is highest among children (Mannino, et al. 2002). Nationally, disturbing increases have also been observed in asthma mortality and hospitalization rates in young people. Based on the limited data available on asthma mortality and morbidity in California, trends in asthma prevalence and death rates are consistent with these national patterns. According to data from the California Behavioral Risk Factor Surveillance System (BRFSS) survey, self-reported lifetime occurrence of asthma increased 66 percent between 1984 and 2001. Lifetime prevalence was 14.5 percent for African Americans, 14.6 percent for Whites, and 8.9 percent for Hispanics in 2001, as reported in the BRFSS. (Note: race and ethnicity categories are reported as collected in the referenced data.) The prevalence of active asthma was 7.6 percent, and it was higher in

women than men. Nationally, in the last 20 years, asthma-related physicians' office visits have doubled, up to 10.8 million visits annually (Mannino, et al.). In 1999, there were an estimated 2 million emergency department visits for asthma in the United States (U.S.) (Mannino, et al.). No information on office visits for asthma is available for California, and data on emergency department visits will soon be collected and compiled in a statewide database.

Despite the increases in prevalence, asthma hospitalization rates have decreased 30 percent in California since 1983 (Von Behren, Kreutzer, Smith 1999). The overall California hospitalization rates (for all ages) comparing races/ethnicities are summarized in Graph 1.

As illustrated in Graph 1, Blacks in California have the highest hospitalization rate, approximately three times greater than the rate for Whites. The rates for Hispanics and Asians are similar to the rates for non-Hispanic Whites. However, asthma

Graph 1



hospitalization rates for Hispanic and Asian children in California have been increasing, while declining for White children (Von Behren, et al. 1999). Lastly, the rates for Black children have remained generally constant, with rates four times higher than White children.

The overall hospitalization rate for California is lower than the national rate and much lower than the rate for the northeast region of the U.S. (Graves, Gillum 1997). DHS reviewed hospitalization rates among California's 58 counties to look for regional patterns, but no clear geographic relationships were apparent (DHS 1997).

In 2000, over 500 people died from asthma in California (DHS 2000). The trends in asthma mortality in California have been similar to the national patterns. California's asthma mortality rates compared to national rates are illustrated in Graph 2.

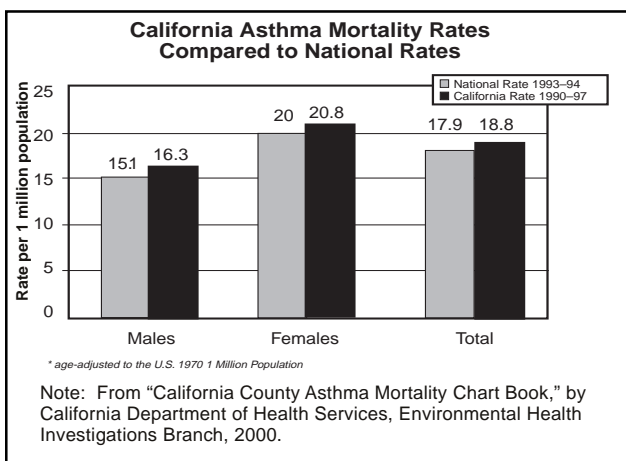
The mortality rates are highest among Blacks and higher in females than males (Schenker, et al. 1993). Comparison of California mortality rates by race and sex is illustrated in Graph 3.

In a recent CDC report, the western region of the U.S. had the highest asthma mortality rates in the country (Mannino, et al. 2002). This finding contrasts with the low rates of hospitalizations for asthma in the West.

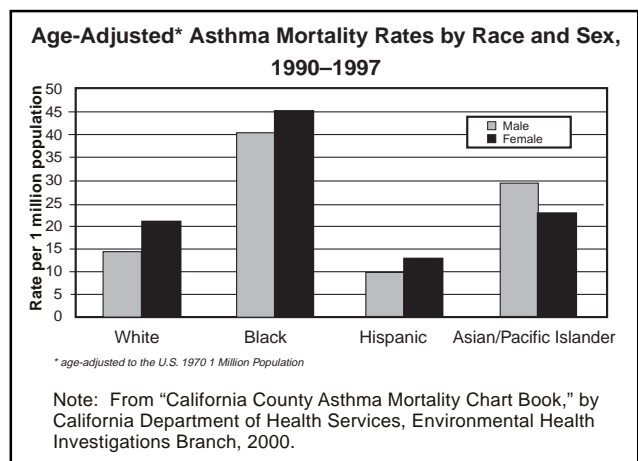
## High-Risk Groups

The disease burden of asthma is greatest in lower-income and non-White populations. Nationally and in California, the rates of asthma hospitalization and mortality are much higher among Blacks than among Whites. Low socioeconomic status (SES) is a demographic risk factor for asthma and morbidity from this disease is a growing problem in inner-city areas (Weiss, Gergen, Crain 1992). Prevalence of asthma symptoms has been reported to be higher among low-income, urban children than among other children (Crain, Weiss, Bijur, et al. 1994; Ernst, Demissie, Joseph, et al. 1995). Asthma hospitalization and mortality rates have also been associated with indicators of low SES (Carr, Zeitel, Weiss, 1992; Wissow, Gittelsohn, Szklo, et al. 1998). Inadequate primary care or lack of insurance coverage could contribute to excess deaths and hospitalizations for asthma in poor neighborhoods. Environmental factors may also partially account for the disproportionate burden of asthma morbidity in low-income neighborhoods (Weiss, Gergen, Hodgson 1992). Poor housing conditions, including cockroaches, dust mites, old carpets, mold, crowding, and inadequate ventilation may contribute to the development and exacerbation of asthma. Exposure to air pollution and environmental tobacco smoke may also play a role in the disproportionate burden in certain populations. Other possible

Graph 2



Graph 3



factors include the high rate of low birthweight and premature births, though this relationship is not well established (Weiss, et al.).

### *Economic Impact*

The total cost of asthma in the U.S., including both direct and indirect costs, was estimated to be \$10.7 billion in 1994 (Weiss, Sullivan, Lyttle 2000). Hospitalizations, physicians' services and medications represented the largest direct medical expenditures for this disease. This accounted for an estimated \$6.1 billion (Weiss, et al. 2000). Nationally asthma morbidity caused children to miss an estimated 11.7 million days of school annually, and the resulting loss of time to caretakers was the largest single indirect cost of asthma in the U.S. (Weiss, et al.). Indirect costs due to asthma, including days of school and work missed and years of life lost due to premature deaths totaled an additional \$4.6 billion per year (Weiss, et al.).

The total cost of asthma in California was estimated to be \$1.27 billion in 1998 (Allergy & Asthma Foundation of America). Hospitalizations and medications represented the largest direct medical expenditures for this disease. In 2000, hospital-related stays in California cost \$480 million, the average cost per stay was \$13,000 (Office of Statewide Development and Planning [OSHPD] 2000). Approximately one-third of these hospital-related stays were paid for by Medi-Cal (OSHPD 2000). Among children hospitalized for asthma, Medi-Cal was the primary payer for 45 percent of the stays in 2000 (OSHPD). In 1996, 656 Californians died from asthma (DHS 1996), and it was estimated that these deaths resulted in 15,000 years-of-life lost.

### *Research and Surveillance*

Currently, medical science has a limited understanding of the etiology of asthma due to the complexity of disease development. Considerations involved in disease development include genetics, immune function, and early life exposures to factors such as infections and environmental triggers.

The underlying causes for the increase in asthma prevalence are unknown, dictating a need for basic science and etiologic research in this area and better assessment of environmental exposures, especially in minority, low-income populations in California. Moreover, early life exposures need to be investigated due to the important role they may play in the onset of asthma.

California, like most other states recently surveyed by CDC, lacks a comprehensive asthma surveillance system (CDC 1996). Currently there is no way to monitor trends in emergency room and office visits for asthma in California residents. The only routinely available statewide data monitors asthma-related hospital discharges and deaths, which captures only the most severe outcomes.

### *Science and Current Knowledge*

The 1997 National Institutes of Health's Guidelines for the Diagnosis and Management of Asthma summarized current research and recommendations from the Expert Panel Report 2. A better understanding of the role of inflammation in asthma now exists. This underlying airway inflammation produces an airway that is more hyperresponsive to other stimuli, which leads to recurrent episodes of wheezing and other symptoms (National Asthma Education and Prevention Program Expert Panel Report 2 1997; National Cancer Institute 1999, Institute of Medicine 2000). Numerous studies have shown improved asthma control and improved lung function with the regular use of anti-inflammatory medications (Donahue, Livingston, Goetsch, 1997; Simons 1998).

The environmental aspects are also better understood. Air pollution (e.g., ozone, sulfur dioxides, particulates), other irritants (e.g. tobacco smoke, nitric oxide [NO<sub>2</sub>]), and allergens (e.g. house dust mite, cockroaches, molds, animal dander) are important factors that have been shown to increase asthma symptoms and exacerbations (National Asthma Education and Prevention Program Expert Panel Report 2, 1997). Teaching patients and families to effectively manage their asthma based on this information may improve their quality of life and decrease the utilization of emergency services (DHHS 2000).

### *Implementation of Guidelines*

Unfortunately, the current management of asthma is not consistent with the national guidelines. There are multiple underlying factors that impede improved asthma management and control. Wider implementation of the guidelines by health care providers, health systems, patients, and families is needed. Proper diagnosis of asthma early in its course, coupled with appropriate patient education of self-management, is paramount. In addition, because of the length and complexity of the guidelines and limited time in clinician's offices for asthma education, it has been difficult to implement all aspects of the guidelines in actual practice, even among motivated health care providers. Other clinicians may not be aware of the existence of the guidelines. The lack of appreciation of the severity of asthma by both patients and providers is a risk factor for asthma morbidity and mortality (Birkhead, Attaway, Strunk, Townsend, Teutsch 1989). Other risk factors include undermanagement by physicians and delays in treatment (Walker, Greenberger, Patterson 1990). Provider education tailored to their own practice should concentrate on practical methods to deliver asthma education, emphasizing the implementation of asthma management plans, to patients and families. Barriers to providing education must be identified and

efforts made to implement asthma-friendly policies and system changes that support quality care and education. Therefore, increasing the clinician's knowledge and addressing these system changes must occur to provide an environment that supports asthma education and quality asthma care.

### *Adherence*

Poor adherence to asthma management plans, improper use of medications, and inadequate environmental control are all too common. This is particularly true in minority and low socioeconomic status populations (Apter, Reisne, Affleck, Barrows, ZuWallack 1998). The episodic nature of asthma exacerbations makes adherence to daily management regimens particularly difficult for the asthma patient. Thus, it is not surprising that adherence to asthma medications is low, approximately 30-70 percent (Bender, Milgram, Rand 1997). Methods to improve adherence to self-management regimens include: (1) effective patient/family education; (2) addressing the psychosocial issues that the patient/family faces; (3) gaining an understanding of the serious nature of asthma; (4) understanding that asthma is controllable; and (5) realizing the importance of self-management (Bender, et al.; Bosley, Fosbury, Cochran 1995). Improved patient/provider communication with effective self-management education can improve adherence to asthma management regimens (Bailey, Richards, Brooks, Soong, Windsor, Manzella 1990; Bender, et al.; Bender, Milgram 1996; Mannino, et al. 1998; Wilson, Latini, Starr, et al. 1996). Important factors associated with adherence to self-management plans include simple regimens, family characteristics, patient beliefs and understanding of the treatment and management of asthma, and the relationship between the health care provider and the patient (Mellins, Evans, Zimmerman, Clark 1992).



## Access

Access to appropriate asthma care is also an important factor that should be addressed. Often the most vulnerable populations are not getting the ongoing, preventive health care needed to control their asthma. A cycle of using the emergency department only when the patient with asthma becomes sufficiently symptomatic can perpetuate an episodic approach to asthma, rather than a preventive, ongoing approach. Access to appropriate care includes not only adequate health coverage, but also other factors such as available time, transportation, shorter waiting times, high quality asthma care, and staff who are able to communicate in the appropriate language and are sensitive to a patient's cultural views and traditions.

## Other factors

Psychosocial and socioeconomic factors have been acknowledged as very important factors associated with increased asthma morbidity and mortality (Kattan, Mitchell, Eggleston, et al. 1997). Acknowledging and properly addressing the psychosocial and socioeconomic issues that patients and families face is key in adherence to asthma management regimens (e.g. referrals to appropriate resources). The National Cooperative Inner City Asthma Study utilized social workers for both asthma education and for referrals so that other pressing issues could be addressed. This resulted in better management and control of patients' asthma. If such factors are not addressed, it is unlikely that asthma management will be a priority for patients and their families.

## Comprehensive Approach

A comprehensive approach is required because of the wide variety of factors that must be addressed and the broad range of the impacts of asthma. Partnerships are essential in addressing the barriers and changing the norms around asthma to decrease the burden of asthma in California, particularly among our most vulnerable populations.

## Research, Epidemiology, and Evaluation

### **Goal**

**Conduct etiologic, applied, and translation research, including descriptive epidemiology, to develop and implement effective asthma prevention and management strategies.**

### **Rationale**

Effective asthma interventions should be based on sound scientific evidence. Currently, the etiology of asthma remains poorly described. There are many theories, but no consensus regarding a specific explanation for the increase in asthma prevalence. Further research is needed for the development of effective primary prevention strategies. Although it is premature to suggest a primary prevention strategy for asthma, secondary and tertiary prevention approaches have been identified as important to decrease asthma morbidity. Moreover, further research is necessary to better understand what strategies are most effective in decreasing asthma morbidity in specific settings, as well as identifying the relationship between asthma and the occupational setting.

It will be important to evaluate strategies implemented to improve the quality of asthma care and to disseminate information about particularly effective strategies. The distribution of asthma morbidity and mortality within populations can assist in targeting and evaluating interventions. Information on asthma management measures can assist in planning, developing, implementing, and evaluating effective clinical and population-based interventions. The distribution of risk factors for asthma exacerbations and incidence in different sub-populations needs to be better understood. In this way, both the disparities in asthma morbidity and the asthma burden for all Californians can be addressed.

### **Objective**

1. Conduct descriptive epidemiologic studies to characterize the distributions of asthma prevalence, morbidity, mortality, and asthma management measures in California.

### **Strategies**

- Use existing and new data sources (Behavioral Risk Factor Surveillance System [BRFSS], California Youth Tobacco Survey, California Health Interview Survey [CHIS], State and Local Area Integrated Telephone Survey [SLAITS], vital statistics, school-based surveys) to fill identified gaps in prevalence data and to characterize the distribution of asthma, its severity, and management. These data can assist in planning and implementing effective clinical, community, and population-based interventions. Examples of special studies may include studying the causes and risk factors for California asthma fatalities and the development of a measure of undiagnosed asthma.
- Use a standard case definition of asthma and standards for the measurement of asthma morbidity and mortality.
- Establish standards for measures that track the prevalence of active asthma, asthma-like symptoms, hospitalization rates, and asthma management (e.g. influenza vaccination rate, medication refills, environmental controls, and written action plans).

**Objective**

2. Establish partnerships and conduct research studies for collaborative asthma epidemiology, asthma assessment, and quality improvement studies/interventions.

**Strategies**

- Work with interested health plans, medical groups, Independent Practice Associations (IPA), health care providers, pharmacists, and patients to assess prescription refill patterns, health care utilization patterns (e.g. emergency department visits, urgent care visits, other outpatient visits), and health plan asthma benefits.
- Assess both patient and provider viewpoints through focus groups, surveys, or structured interviews and work collaboratively with interested California foundations and academic researchers to plan and fund needed research studies.

**Objective**

3. Conduct research studies that would help clarify the relationships among environmental (indoor and outdoor) exposures, other risk factors, and asthma incidence and exacerbations.

**Strategies**

- Conduct studies that assess the prevalence of asthma in children in California. These studies are particularly needed to fill the gap in existing prevalence information. Such studies should include school-based prevalence surveys and expanding the BRFSS to include questions on asthma in children. The school surveys could be modeled after the well-established protocols of the International Study for Asthma and Allergy in Children (ISAAC). Additionally, a cohort study of children followed from birth onward would be informative about the natural history of the disease.

- Investigate potential causes and risk factors for asthma in California populations; include indoor and outdoor environmental factors, such as passive smoke exposure, molds, dust mites, and air pollutants. These factors should be evaluated for the prevalence of exposure and for the potential interactions with family history and allergic predisposition.
- Review all asthma deaths among young people. This should be done in an in-depth and timely manner. This type of death review could help identify factors that may be prevented or controlled in other persons with asthma.

**Objective**

4. Assess asthma technical assistance needs and interests within local health departments, IPAs, medical groups, and health plans for future asthma collaborations.

**Strategies**

- Identify common intersects and interests among individual groups as potential areas for program collaboration.
- Conduct a data needs assessment of local health officers, private physicians, and health plan administrators to more appropriately address the individual technical assistance needs.

## Public Education

### **Goal**

***Improve the understanding and management of asthma as both a personal and public health issue for people with asthma and their families, policy makers, and the general public.***

### **Rationale**

The general public, policy makers, and even persons with asthma and their families are often not aware of the magnitude of the asthma problem; its signs and symptoms; factors that can exacerbate asthma; what can be done to manage and control asthma; and what resources are available. Thus, it is important for education and training to occur not only with the health care provider and the patient, but also with those that interact closely with persons with asthma in other settings. This may include settings such as schools, childcare centers, and work sites. Many people make decisions that affect the health and well-being of those with asthma; these decision makers also need to understand the special needs and considerations of persons with asthma. School administrators, health plan administrators, governmental organizations, the Legislature, housing authorities, and employers should understand the needs of persons with asthma and how best to provide a healthy and safe environment for them through effective policies within their organizations. For example, schools should be an important partner in efforts to target school-age populations. Controlling asthma in school-aged children will help schools to have a healthy student population that is ready to learn and decrease school absences.

Because of limited resources, efforts should be made to coordinate activities both among statewide organizations and within local communities. Attempts should be made to decrease duplicative activities and make sure that services are reaching those persons who are in need of receiving them, particularly low-income, uninsured, and high-risk minority populations. Collaboration and referrals should occur among existing community, public health, and health care delivery stakeholders to target at-risk populations, implement effective policies, and share lessons learned. Effective asthma programs should be promoted and replicated throughout California.

### **Objective**

1. Develop a resource list of organizations and experts on different cultures to assist organizations in developing linguistically and culturally appropriate asthma programs and materials and cultural adaptations of current materials.

### **Strategies**

- Elicit broad input from known experts within academia, the community, public health, and other sectors who would be interested in consulting with others on linguistically and culturally appropriate programs and materials.
- Promote the development and use of a resource list and current availability of low literacy and culturally appropriate asthma materials.

**Objective**

2. Collaborate with partners to disseminate linguistically and culturally appropriate resource information for the proper understanding and management of asthma to persons with asthma and their families in California.

**Strategies**

- Conduct an asthma resource needs assessment and identify existing linguistically and culturally appropriate asthma resources, e.g. asthma programs and educational materials.
- Prioritize the identified resource needs to initiate specific programs, interventions, and distribution of educational materials.
- Collect and review existing published asthma educational materials, packaged asthma programs, and other resources for people with asthma. Evaluate existing asthma educational materials for the purpose of translation and cultural adaptation.
- Develop an Internet-based clearinghouse to disseminate information on current and published asthma educational materials and programs. Provide a resource directory that will be available to the public.

**Objective**

3. Disseminate linguistically and culturally appropriate information on asthma “best practices” including information on evaluated asthma interventions and dissemination mechanisms.

**Strategies**

- Collect and review existing evaluated asthma interventions. Identify, summarize, and disseminate “successful” asthma interventions, especially those that target members of cultures and ethnic groups known to be at high risk for asthma.
- Assess the need for additional evaluation of current asthma interventions and provide technical assistance to local programs regarding effective interventions.

**Objective**

4. Implement an asthma awareness program in a target population.

**Strategies**

- Determine the priority target population and develop effective asthma awareness messages.
- Use focus groups to develop effective messages that are culturally and linguistically appropriate for these groups. Messages should include information on early warning signs, environmental triggers, what to do at the onset of asthma symptoms, self-management, need for ongoing care and expectations for a high quality of life.
- Determine goals for awareness messages and assess knowledge, attitudes, and beliefs of the target population before and after the campaign/education.

**Objective**

5. Implement a targeted education program to policy and decision-makers to reduce environmental factors that exacerbate asthma.

**Strategies**

- Determine target decision-makers in priority settings (e.g. housing authority, schools, childcare, work sites, industry) and appropriate messages regarding the role of environmental factors that exacerbate asthma (e.g. dust mites, molds, strong odors, tobacco smoke, air pollution, and cockroaches).
- Identify appropriate goals for asthma awareness messages (policy change, advocacy) and link policy changes with the education.

**Objective**

6. Develop and maintain an internet-based clearinghouse of asthma best practice models.

**Strategies**

- Develop a web-site that includes information on validated and efficacious asthma programs (e.g., educational, community-based, environmental, health delivery), validated questionnaires (screening, surveys), risk stratification methodologies, key peer-reviewed articles, and other evaluated asthma projects.

**Objective**

7. Work with the Department of Education to develop and implement staff development standards for asthma in California's public school system.

**Strategies**

- Collaborate with community partners to develop training programs as well as programs to promote the use of school standards throughout the state. This should include use of asthma action plans in schools.
- Collaborate with school nurses, administrators, parents, professional health organizations, and health care providers to develop systems so that school-age children with asthma are able to have their written action plans followed in the school setting.

# Asthma Treatment and Management

## Goal

**Optimize the diagnosis, treatment, and management of asthma in California by adherence to the current National Heart, Lung, and Blood Institute's asthma guidelines.**

## Rationale

The National Heart, Lung, and Blood Institute (NHLBI) and the American Academy of Allergy, Asthma, and Immunology (AAAAI) have established guidelines for the effective diagnosis and management of asthma. However, these guidelines have not been widely implemented. These guidelines were produced to help bridge the gap between current knowledge and the actual practice of health care providers in delivering asthma care. Studies have shown that traditional professional education techniques such as large group lectures may increase knowledge, but are often insufficient to change behavior. More effective professional education strategies to disseminate the NHLBI's national asthma guidelines to all clinicians caring for people with asthma must be developed and implemented. Such strategies should include interactive education, case discussions, smaller group clinic-specific trainings, use of opinion leaders, and multi-modal interventions. They may also utilize additional tools such as reminders and provider profiling/feedback. In addition, other system issues and barriers must be resolved so that quality asthma care can be delivered.

For quality management of asthma, patient and caregiver education should be an integral part of each interaction by all health care providers along the full continuum of care. Improved training of California health care providers and other asthma educators will assist in providing standardized, high-quality asthma education to Californians with asthma. Specific interventions should be targeted at high-risk populations, and should be both

linguistically and culturally appropriate. A resource guide of validated and efficacious programs should be compiled and disseminated to assist health care providers, interested organizations, and concerned communities in developing their own asthma programs.

## Objective

1. Promote the use of the NHLBI and the pediatric AAAAI asthma guidelines through high quality, effective provider education to improve the diagnosis and management of asthma.

## Strategies

- Utilize techniques such as education within the health care setting for all staff (health care providers, administrative staff). Include interactive techniques and case studies. Assure that system barriers are addressed and problems resolved, using techniques such as continuous quality improvement.
- Develop a single funding structure to receive contributions to implement objective asthma educational activities for health care providers.
- Promote effective patient and caregiver education with key messages integrated into each step of care.
- Identify at-risk target populations/ patients, such as African Americans, active and passive smokers, etc. Improve diagnosis and management in these populations by targeting training for health care providers for these populations.

- Use outreach mechanisms, such as the “Breathmobile” to reach at-risk populations.
- Assess utilization of medications to improve management, and assess utilization of services to facilitate access to at-risk populations.
- Improve asthma diagnosis and management as documented in the NHLBI and AAAAI guidelines, utilizing objective measurements of lung function and ruling out other diagnoses that may present similarly (e.g. bronchiolitis in young children, congenital heart disease, chronic obstructive pulmonary disease).
- Conduct special studies in target populations. Assess the use of spirometry in the diagnosis of asthma and chronic bronchitis for inpatient and outpatient settings.
- Determine the numbers of health care providers who have received specific types of asthma training and evaluate these training programs.

### **Objective**

2. Improve the anti-inflammatory-to-bronchodilator (AI/B) prescription refill ratio.

### **Strategies**

- Work with Medi-Cal or other central sources of data/information to identify if an overall anti-inflammatory-to-bronchodilator prescription ratio refill can be determined and monitored over time for the California Medi-Cal population.
- Encourage effective patient education regarding inhaler usage with key messages integrated into each step of care.
- Establish a system for profiling prescription refills and feedback (e.g., payers, health plans, Medi-Cal).

### **Objective**

3. Increase to 75 percent the proportion of people with asthma who receive written asthma management plans from their health care provider. Maintenance and emergency management instructions should also be included.

### **Strategies**

- Promote high-quality professional asthma education, especially the use of asthma management plans.
- Coordinate activities with school administrators, health plan administrators, health care providers, non-governmental organizations, patients with asthma and their families to promote the development, use, and dissemination of a written asthma management plan.

### **Objective**

4. Increase to 60 percent the percentage of persons over 6 months of age with persistent asthma who receive an annual influenza vaccine.

### **Strategies**

- Utilize or develop a marketing campaign to educate the public about receiving an annual influenza vaccine.
- Provide reminders to patients/health care providers regarding influenza immunization by health plans and other health care groups.
- Conduct surveys (population-based and health plan) to identify who receives annual influenza immunizations.
- Document the number of media messages and public education programs regarding influenza immunization for persons with persistent asthma.
- Identify health plans and other health care organizations that use an influenza immunization reminder system for persons with persistent asthma. Encourage expanded use of such reminders.



**Objective**

5. Reduce asthma morbidity, as measured by a reduction in the rates of asthma-related hospitalizations and asthma-related emergency department visits (refer to Appendix A).

**Strategies**

- Encourage patient and family/caregiver education to improve asthma management.
- Utilize national asthma education standards and develop or adopt an effective training (and certification) program to certify asthma educators in California.
- Promote improved patient and family/caregiver relationships with health care providers to enhance asthma self-management skills.

**Objective**

6. Ensure the availability of prescribed asthma medications for children with asthma, particularly in the school setting.

**Strategies**

- Work with the Department of Education to develop standards for medication access within the schools.
- Develop a resource for implementing these standards within the school setting. For example, create outreach teams to assist schools to develop appropriate policies and procedures to assure appropriate and safe access to prescribed asthma medications within the school setting.
- Develop and implement statewide guidelines for appropriate medication access in schools.

**Objective**

7. Increase the proportion of persons with asthma who receive education about recognizing early signs and symptoms of asthma episodes and how to respond appropriately.

**Strategies**

- Work with pharmacists to educate patients/family members on the purpose of a peak flow meter and its proper use. Assess the current availability of peak flow meters and how to best facilitate access to them by patients with asthma.
- Promote high-quality professional asthma education, including how to teach the proper use of peak flow meters and use of written asthma management plans.
- Identify opportunities to train pharmacists and health care providers on the use of medical devices specific to asthma and written asthma management plans, and disseminate information on appropriate asthma training programs, particularly those that have been evaluated.

## Secondary Prevention of Asthma

### Goal

**Identify opportunities to reduce exposure to asthma triggers (allergens and irritants) in the home, preschool, school, workplace, and outdoor environment to prevent asthma episodes or reduce their severity.**

### Rationale

While there is no known cause or cure for asthma, research indicates that people with asthma have more frequent and/or severe symptoms if they are exposed to environmental triggers that can cause an asthma attack. Triggers may include second hand tobacco smoke, air pollutants (air and diesel exhaust fumes), chemicals, mold, cockroaches, dust mites, pollen, animal dander, and viral respiratory infections. Disabilities and the risk of death associated with asthma are largely preventable with proper medical attention and reductions in environmental triggers. Parents, community leaders and organizations from the public, private and non-profit sectors can play important roles in reducing asthma triggers where people live, learn, work and play. Environments supportive of people with asthma will, in effect, be enhanced for all people.

### Objective

1. Increase implementation of environmental control measures in the home.

### Strategies

- Promote effective communication that will empower patients and families to develop the necessary self-management skills to implement environmental control measures in the home.

- Promote the use of dust mite-impermeable mattress/pillow covers for persons with asthma who are sensitive to dust mites. Initiate discussions with health plans and other organizations regarding potential reimbursement for allergy testing and allergen-impermeable mattress/pillow covers for persons with asthma sensitive to dust mites.
- Facilitate referrals to smoking cessation programs.

### Objective

2. Work with Community Care Licensing to promulgate standards or guidelines to reduce allergens and irritants within the preschool and childcare setting.

### Strategies

- Assess childcare center asthma policies and practices.
- Convene stakeholders to evaluate study results and formulate model policies and practices.
- Develop a plan to implement model policies and practices in licensed childcare facilities.

### **Objective**

3. Work with the California Department of Education (CDE) to reduce asthma triggers in the schools.

### **Strategies**

- Continue to develop a new section in the CDE's standards to best assist children with asthma to manage this chronic illness within the school setting and promulgate standards to reduce allergens and irritants within the school setting so that children may participate fully in school activities.
- Promote measurements of asthma-related school absenteeism.

### **Objective**

4. Collaborate with partners to reduce the incidence of work-related asthma by 33 percent in the agricultural, manufacturing, transportation, and lumber and wood manufacturing industries.

### **Strategies**

- Use current workers' compensation and other surveillance data to identify and intervene in occupational asthma cases by implementing workplace control measures and educating employers, employees, and other professionals. This strategy will also include workplace investigations and healthcare provider education.

### **Objective**

5. Collaborate with the Environmental Protection Agency (EPA) and other programs to develop, support, and implement environmental conditions/exposure policies to reduce the impact of asthma in workplaces, schools, homes, and low-income communities using evidence-based methods.

### **Strategies**

- Identify/develop, support, and disseminate existing guidelines and strategies that address the issues of exposure to tobacco smoke, mold, cockroaches, gases, solvents, etc.
- Determine needed areas of improvement and appropriate interventions.
- Develop guidelines for high-risk, underserved populations.
- Identify organizations that have received guidelines and have implemented changes.

# Policy

## Goal

**Advocate and support policies that promote “asthma friendly” communities, especially those that eliminate the disproportionate burden of asthma for people living in poverty and people of color.**

## Rationale

Policies that support and promote “asthma friendly” communities are important in the overall reduction of asthma morbidity and improvement of quality of life of persons with asthma and their families. Effective policies can have an impact on populations with asthma. Increased awareness of asthma as an important health problem by decision-makers can set the stage for “asthma-friendly” policies. Appropriate access to high quality health care is a multidimensional concept involving not only availability of health insurance, but also addressing other barriers to access such as cultural, linguistic, transportation, and socioeconomic factors; health beliefs; and asthma expertise of the clinician. Guidelines that center on the physical environment of workplaces, schools, homes, and low-income communities may be useful in effecting change in these important locations where persons with asthma may spend much of their time. Communities play an important role and can assist the person with asthma in receiving proper asthma education, outreach, coordination of medical care, and other services. They can also facilitate the implementation of proper environmental control measures in locations where persons with asthma may spend a significant amount of time. Because of the broad, overarching nature of policy changes, the objectives in this section may overlap with objectives identified in earlier sections.

## Objective

1. Improve health coverage for uninsured or underinsured populations/patients with asthma.

## Strategies

- Collaborate with other groups to assure appropriate access.
- Improve enrollment in Healthy Families and Medi-Cal for eligible persons.
- Evaluate a pilot trial of “safety net” asthma drug subsidies and medical visits for uninsured and underinsured children with asthma less than five years old through Children’s Medical Services for potential implementation in additional populations.

## Objective

2. Educate policymakers and develop policies that promote the implementation and evaluation of innovative community-based interventions to decrease the burden of asthma in high-risk populations.

## Strategies

- Advocate for continued support of community asthma interventions from the California Children and Families Commission.
- Promote and support the development of new and innovative models for asthma management, which improve upon earlier models.
- Advocate for asthma management programs that continuously incorporate the latest scientific advances to decrease the burden in high-risk populations.
- Evaluate results of new programs and interventions.

**Objective**

3. Create a structure for asthma surveillance, prevention, and control at DHS.

**Strategies**

- Create a coordinated program addressing asthma, involving a comprehensive approach including components such as: community programs, epidemiology, provider education, public education, occupational asthma, outreach and coordination with health care providers and organizations, improvement of medical management, environmental control interventions, policies, and research.
- Facilitate collaboration on asthma activities between DHS, Medi-Cal, Cal-EPA, CDE, DSS, local health departments, health plans, and all other non-governmental organizations.
- Establish an Advisory Committee to assist in implementing recommended measures, to provide direction for program planning and evaluation, and to serve as an advocate for asthma prevention and control.
- Continue to seek collaborative partners to assist in delivering consistent asthma messages and policy recommendations to focus efforts on priority asthma issues and concerns.

**Objective**

4. Continue to support the development and incorporation of an asthma health assessment component into the Child Health and Disability Prevention Program's (CHDP) Health Assessment Guidelines.

**Strategies**

- Seek or use existing funding from the California Children and Families Commission to develop and incorporate an asthma component into the CHDP Health Assessment Guidelines and provide training for county CHDP staff.

**Objective**

5. Seek funding for local health departments to develop asthma programs within their jurisdictions.

**Strategies**

- Assess current interest in the development of a local health department-based asthma program from local health departments.
- Assess interest and capability among health plans serving the Medi-Cal population in their jurisdiction regarding analysis of local data, assessment of current asthma programs and interventions within their jurisdiction, and interest in collaborative asthma programming.
- Develop a mechanism for ongoing communication and collaboration between DHS and local health department-based asthma programs.

## Glossary of Terms

The asthma-related definitions were obtained from the “Journal of the American Medical Association,” the Global Initiative for Asthma, and the University of Chicago. The research related definitions were obtained from Centers for Disease Control and Prevention, “A Dictionary of Epidemiology, the National Library of Medicine and the US Department of Health and Human Services.”

**AAAAI** - American Academy of Asthma, Allergy and Immunology is the largest professional medical specialty organization representing allergists, clinical immunologists, allied health professionals, and other physicians with a special interest in allergy.

**Action plan** - a list of specific instructions drawn up by a health care professional for a person with asthma to follow at home, school, work, etc. An asthma action plan includes a normal schedule for asthma medicines, as well as what to do if peak flow readings or asthma symptoms become worse than usual. Asthma action plans are usually split into Zones: Green Zone, Yellow Zone, and Red Zone.

**Acute** - brief (days to weeks); sudden.

**Airflow** - the rate at which you can blow air out of your lungs.

**Airflow limitation** - “Airflow limitation” replaces other phrases such as “airway obstruction” and “airway narrowing” that imply specific mechanisms of airflow limitation. “Airflow limitation” reflects the multiple mechanisms involved in the physiological abnormalities of asthma.

**Airway hyperresponsiveness** - describes airways that narrow too easily or too much in response to a provoking stimulus. In asthma, airways can be hyperresponsive to many different stimuli.

**Age-adjusted mortality rate** - a mortality rate statistically modified to eliminate the effect of different age distributions in the different populations.

**Anti-inflammatory** - inhibiting one or more of the components of the inflammatory reaction.

**Anti-inflammatory to Bronchodilator ratio** - an asthma-related quality measure that utilizes information on the ratio of anti-inflammatory to bronchodilator medications. Kaiser Permanente has developed and uses a ratio that specifically looks at weighted units of anti-inflammatory inhalers to total asthma inhalers. For this particular measure, all asthma inhalers are weighted according to relative potency (inhaled steroids) and/or puffs per canister. An “Asthma Ratio Report” has been used by Kaiser Permanente to profile individual providers based on their individual ratio utilization of inhaled asthma medications.

**Asthma** - “Asthma as a ‘disorder’ rather than a ‘disease’- many factors contribute to airflow limitation in asthma, each related to the inflammatory process. These factors may vary within and between individuals. This leads to a marked variability of clinical presentation. This also leads to the hypothesis that asthma is not a single disease, but rather is a common clinical expression of possibly different pathogenic mechanisms.”

Please refer to the Council of State and Territorial Epidemiologists position statement on “Asthma Surveillance and Case Definition” at: [www.cste.org/ps/1998/1998-eh-cd-01.htm](http://www.cste.org/ps/1998/1998-eh-cd-01.htm).

**Asthma management** - a comprehensive approach to achieving and maintaining control of asthma. It includes patient education to develop a partnership in management, assessing and monitoring severity, avoiding or controlling asthma triggers, establishing plans for medication and management of exacerbations, and regular follow-up care.

**Atopy** - the propensity, usually genetic, for developing allergic mediated responses to common environmental allergens.

**Beta-agonist** - also called beta 2 -agonist or beta-adrenergic agonist. Also written as beta-agonist or beta2-agonist. The most common type of bronchodilator medication. Albuterol is a beta-agonist, which is responsible for relaxing the airway smooth muscle (thereby opening the airways). A class of quick relief medications.

**Breathmobile** - a mobile treatment center that brings free asthma treatment and medications to students in public schools. The Allergy & Asthma Foundation of America, Southern California Chapter raises money each year to operate several Breathmobiles.

**BRFSS** - Behavioral Risk Factor Surveillance System is an ongoing telephone survey that was developed and conducted to monitor state-level prevalence of the major behavioral risks among adults associated with premature morbidity and mortality. The basic philosophy is to collect data on actual behaviors, (rather than on attitudes or knowledge) that would be especially useful for planning, initiating, supporting, and evaluating health promotion and disease prevention programs.

**Bronchoconstriction** - airflow limitation due to contraction of airway smooth muscle. "Bronchoconstriction" replaces the word "bronchospasm."

**Bronchodilator** - a medicine that relaxes the smooth muscles of the airways. This allows the airway to open up (to dilate) since the muscles are not squeezing it shut. Bronchodilator medicines do not help inflammation.

**Case definition** - a set of standard criteria for deciding whether a person has a particular disease or health-related condition, by specifying clinical criteria and limitations on time, place, and person.

**Causal factors** - risk factors that sensitize the airways and cause the onset of asthma. The most important of these factors are allergens and chemical sensitizers.

**CHDP** - Child Health and Disability Prevention program is a preventive health program serving California's children and youth. CHDP makes early health care available to children with evident health problems as well as to those who seem well.

**CHIS** - California Health Interview Survey is the largest telephone survey in the United States, which surveys 55,000 households in each county throughout California, focusing on public health and access to health care.

**Chronic** - remains for several years, possibly a lifetime.

**Clinical practice guidelines** - a systematically developed statement to assist practitioner and patient decisions about appropriate health care for one or more specific clinical circumstances.

**Contributing factors** - risk factors that either augment the likelihood of asthma developing upon exposure to a risk factor or may even increase susceptibility to asthma.

**Controller medications** - medications taken daily on a long-term basis that are useful in getting persistent asthma under control and in maintaining control. They include inhaled corticosteroids, long-acting bronchodilators, and leukotriene modifiers. Anti-inflammatory agents, particularly inhaled corticosteroids, are at present the most effective controller medications. Controller medications are also sometimes called prophylactic, preventive, regular preventive, or maintenance medications.

**Corticosteroids** - a type of medicine used to reduce inflammation. Corticosteroid drugs mimic a substance produced naturally by the adrenal glands. In asthma, corticosteroids are often taken through an inhaler for long-term control. They may also be taken orally or given intravenously for a short time, if asthma symptoms get out of control.

**Cost-of-illness evaluation** - empiric description of the economic consequences of illness on individuals or populations.

**CYTS** - California Youth Tobacco Survey. The CYTS is an on-going telephone survey of randomly selected youth between the ages of 12 and 17. This survey queries youth about their tobacco use behavior and attitudes about tobacco use.

**DHS** - California Department of Health Services is one of the largest departments in State Government whose mission is to protect and improve the health of all Californians.

**Descriptive epidemiology** - the aspect of epidemiology concerned with organizing and summarizing health-related data according to time, place, and person.

**Disorder versus disease** - disorder implies a health condition with multiple mechanisms; disease implies a single pathology and etiology.

**Dust mites** - very tiny creatures (microscopic, or just barely visible) that live in the dust in people's homes. They are present both in visible dust (under the bed or behind the couch, for example) and in soft places like pillows, mattresses, blankets, and stuffed animals. They thrive especially when the air is humid. Many people are allergic to dust mites, and trying to reduce the number of them in the home is part of many asthma control plans.

**Economic impact** - effects of a health condition such as asthma measured through direct medical care costs of health services for prevention and treatment; indirect costs in terms of the value of related morbidity, premature mortality, and productivity loss; and intangible costs associated with the value of the psychosocial impacts of a condition.

**Environmental control** - removal of risk factors from the environment.

**EPA** - Environmental Protection Agency is a federal agency that was established to protect human health and to safeguard the natural environment, air, water and land, upon which life depends. The California equivalent is the California Environmental Protection Agency (Cal/EPA) whose mission is to restore, protect and enhance the environment, to ensure public health, environmental quality and economic vitality.

**Epidemiology** - the study of the distribution and determinants of health-related states or events in specified populations, and the application of this study to the control of health problems.

**Evidence-based medicine** - the use of current best evidence from scientific and medical research to make decisions about the care of individual patients. It involves formulating questions relevant to the care of particular patients, searching the scientific and medical literature, identifying and evaluating relevant research results, and applying the findings to patients.

**Etiology** - the study of the causes, or origins, of diseases or abnormal physiological conditions.

**Exacerbate** - to aggravate or make worse. "Exacerbate" replaces the words "cause," "precipitate," "induce," and "incite."



**Exacerbation** - any worsening of asthma. Onset can be acute and sudden, or gradual over several days. A correlation between symptoms and peak flow is not necessarily found. "Exacerbation" replaces the words "attack" and "episode."

**Guided self-management** - providing the patient and his or her family with suitable information and training so that the patient can keep well and adjust treatment according to a medication plan developed with the health care professional.

**Health care professional** - individual who is licensed to provide medical care. Among these are physicians, nurses, nurse practitioners, respiratory therapists, and pharmacists.

**Health Maintenance Organization** - Health Maintenance Organizations (HMO) provide care through a specified network of doctors and hospitals. Members of HMOs select a primary care physician who coordinates all care. A co-payment is typically required for each office visit. Aside from the co-payment, the patient does not pay for services from a physician or hospital. However, the patient is responsible for the cost of services that are not covered benefits or the cost of unauthorized services that the patient elects to receive.

**Healthy Families** - low cost health coverage for children birth through age 18 through the State of California.

**Healthy People 2010** - a set of health objectives for the Nation to achieve over the first decade of the new century. It can be used by many different people, states, communities, professional organizations, and others to help them develop programs to improve health.

**Holding chamber** - a device much like a spacer, which is also intended to help medicine from an MDI get into the lungs. The difference between a spacer and a holding chamber is that a holding chamber has a special valve on it that allows a person more time to breathe in the medicine (the breath does not need to be coordinated with the puff). Holding chambers are often called "spacers," even though they are slightly different things.

**Influenza vaccine** - A vaccine to protect people from contracting influenza, a viral illness affecting the respiratory tract.

**Inhaled corticosteroid** - anti-inflammatory medicine breathed directly into the lungs. The advantage to this is that the medicine goes directly to where the inflammation is, and has minimal effects on the rest of the body (and therefore fewer side effects than corticosteroids taken orally).

**IPA** - Independent Practice Association. An IPA is an association of physicians and other health care providers, including hospitals, that contracts with an HMO to provide services to enrollees, but usually still provide services to non-HMO patients and patients from other HMOs.

**Irritant** - risk factor or trigger that may cause increased symptoms and/or airflow limitation via a neural pathway; a nonallergic substance that may provoke a reaction in the airways.

**ISAAC** - International Study of Asthma and Allergy in Children. It is an international consortium of scientists that is trying to compare the prevalence of asthma in different parts of countries and among different countries.

**Leukotriene** - A type of chemical involved in inflammation. Leukotrienes seem to play a particularly important role in the inflammation associated with asthma. Recently some asthma medicines have been developed that work to reduce leukotrienes or their effects (these are called “leukotriene modifiers” or “leukotriene inhibitors”).

**Medi-Cal** - California’s Medicaid program. Medicaid is a jointly-funded, federal-state health insurance program for certain low-income and needy people. It covers approximately 36 million individuals including children, the aged, blind, and/or disabled, and people who are eligible to receive federally assisted income maintenance payments.

**MDI - metered dose inhaler** - A device that allows delivery of medicine directly into the lungs. The medicine is in the form of a very, very fine powder, and a propellant is used to get the powder out in a cloud to be inhaled.

**Morbidity & mortality** - sickness and death. These words are usually used when looking at the effects of a disease in a population. For example, “asthma causes significant morbidity in this group” means “asthma makes a lot of people in this group sick.” “Asthma mortality in this country is unacceptable,” means “It is unacceptable if anyone in this country dies of asthma.”

**Nebulizer** - a machine for getting medicine into the lungs. A nebulizer makes a mixture of liquid medicine and water into a mist that a person then inhales (through a mask or a mouthpiece).

**NHLBI** - National Heart, Lung, and Blood Institute is part of the federal National Institutes of Health.

**Patient education** - the aim of patient education is “guided self-management.” The health care professional provides the patient and the patient’s family with suitable information and training so that the patient can stay well and adjust treatment according to a medication plan developed with the health care professional. Effective patient education involves a partnership between patient and health care professional with frequent revision and reinforcement. Training includes teaching specific asthma management skills such as how to take medicine correctly, how to recognize when asthma gets worse, and what actions to take to achieve and maintain control.

**Peak flow meter** - a device to measure how hard and fast a person can blow out air. This is an indication of how well the lungs and airways are doing. A peak flow meter is an important part of an asthma home-monitoring plan.

**PEF (peak expiratory flow) home monitoring** - measurement of PEF on a regular basis at home with a portable peak flow meter. PEF home monitoring is especially useful to patients over five years of age with moderate persistent to severe persistent asthma.

**Prevention** - primary prevention is preventing development of the condition of asthma. Secondary prevention is preventing exacerbations of asthma in those who already have the condition and avoiding deterioration in lung function or death from the condition.

**Population-based interventions** - interventions specific to a general population defined by geopolitical boundaries.

**Risk factor** - an agent that when present increases the probability of disorder expression. There are two types of risk factors:

1. Risk factors involved in the development of the condition of asthma. For example, a risk factor for the onset of asthma can be inherited, such as atopy. Alternatively, a risk factor can be due to environmental exposure. See “causal factors” and “contributing factors.”
2. Risk factors that cause asthma exacerbations in individuals who already have the condition. These are also called triggers.

**Severity** - how bad or serious a disease is. In asthma, severity is generally broken up into four categories: mild intermittent, mild persistent, moderate persistent, and severe persistent.

**SLAITS** - State and Local Area Integrated Telephone Survey collects important healthcare data at state and local levels. This new data collection tool was developed by the National Center for Health Statistics (NCHS) of the Centers for Disease Control and Prevention (CDC) to supplement current national data collection strategies by providing in-depth state and local area data to meet various program and policy needs in an ever-changing health care system.

**Social impact** - effects of a health condition on social functioning. In asthma, social impacts include impaired child development and education as well as disruption and loss of adult employment and productivity.

**Spacer** - a device usually consisting of a plastic chamber that attaches to a metered dose inhaler on one end, with a mouthpiece on the other end. A spacer is intended to help get medicine from a metered dose inhaler into the lungs.

**Spirometry** - a test used in a doctor's office or pulmonary function laboratory to measure various components of airflow.

**Translation research** - the conversion of findings from basic, clinical, or epidemiologic environmental health science research into information, resources, or tools that can be applied by health care providers and community residents to improve public health outcomes in at-risk neighborhoods.

**Trigger** - a risk factor that causes exacerbations of asthma; a stimulus that causes an increase in asthma symptoms and/or airflow limitation.

**Wheeze** - a breathing sound that may be squeaky, whistling, or musical. Wheezes are often (but not always) a symptom of asthma. (Some people have asthma but never wheeze, and some people wheeze for reasons other than asthma.) Wheezes are due to air passing through a narrowed opening and are therefore usually accompanied by breathing difficulty.

**Zone system** - an asthma management system based on specified levels of symptoms and PEF that helps patients monitor their disease, identify the earliest possible signs that the day-to-day control of asthma is deteriorating, and act quickly to regain control. A management plan based on a zone system is developed for a patient that describes medications, environmental control measures, and contact with the health care professional for each zone.

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## *APPENDIX A*





*Healthy People 2010:*  
*Objectives for Improving Health: Respiratory Diseases*  
(excerpt)

## 24. Asthma

### *Reduce asthma deaths*

#### Target and baseline:

Objective	Age Group	1998 Baseline	2010 Target
		Rate per Million	
<b>24-1a.</b>	Children under age 5 years	2.1	1.0
<b>24-1b.</b>	Children aged 5 to 14 years	3.3	1.0
<b>24-1c.</b>	Adolescents and adults aged 15 to 34 years	5.0	2.0
<b>24-1d.</b>	Adults aged 35 to 64 years	17.8	9.0
<b>24-1e.</b>	Adults aged 65 years and older	86.3	60.0

Data source: National Vital Statistics System (NVSS), CDC, NCHS

### *Reduce hospitalizations for asthma*

#### Target and baseline:

Objective	Age Group	1998 Baseline	2010 Target
		Rate per 10,000	
<b>24-2a.</b>	Children under age 5 years	45.6	25
<b>24-2b.</b>	Children and adults aged 5 to 64 years*	12.5	7.7
<b>24-2c.</b>	Adults aged 65 years and older*	17.7	11

\*Age adjusted to the year 2000 standard population.

Data source: National Hospital Discharge Survey (NHDS), CDC, NCHS

### *Reduce hospital emergency department visits for asthma*

#### Target and baseline:

Objective	Age Group	1995+97 Baseline	2010 Target
		Rate per 10,000	
<b>24-3a.</b>	Children under age 5 years	150.0	80
<b>24-3b.</b>	Children and adults aged 5 to 64 years	71.1	50
<b>24-3c.</b>	Adults aged 65 years and older	29.5	15

Data source:

National Hospital Ambulatory Medical Care Survey (NHAMCS), CDC, NCHS

Note: From "Healthy People 2010," by DHHS, 2000.

***Healthy People 2010:***  
***Objectives for Improving Health: Respiratory Diseases:***

(continued)

**24. Asthma**

- 24-4. Reduce activity limitations among persons with asthma  
Target: 10 percent.
- 24-5. Reduce the number of school or work days missed by persons with asthma due to asthma.  
(developmental)
- 24-6. Increase the proportion of persons with asthma who receive formal patient education, including information about community and self-help resources, as an essential part of the management of their condition.  
Target: 30 percent.
- 24-7. Increase the proportion of persons with asthma who receive appropriate asthma care according to the NAEPP Guidelines. (developmental)
- 24-7a. Persons with asthma who receive written asthma management plans from their health care provider.
- 24-7b. Persons with asthma with prescribed inhalers who receive instruction on how to use them properly.
- 24-7c. Persons with asthma who receive education about recognizing early signs and symptoms of asthma episodes and how to respond appropriately, including instruction on peak flow monitoring for those who use daily therapy.
- 24-7d. Persons with asthma who receive medication regimens that prevent the need for more than one canister of short-acting inhaled beta-agonists per month for relief of symptoms.
- 24-7e. Persons with asthma who receive follow-up medical care for long-term management of asthma after any hospitalization due to asthma.
- 24-7f. Persons with asthma who receive assistance with assessing and reducing exposure to environmental risk factors in their home, school, and work environments.
- 24-8. Establish in at least 25 States a surveillance system for tracking asthma death, illness, disability, impact of occupational and environmental factors on asthma, access to medical care, and asthma management. (developmental)

Note: From "Healthy People 2010," by DHHS, 2000.